United States Patent [19]

Shyu

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[45] **Date of Patent: Dec. 29, 1987**

[54] **CAMERA MEANS FOR REGULATING THE EXPOSURE AREA OF A FRAME OF FILM**

[76] Inventor: **Shiow-Feng Shyu**, P.O. Box 10780, Taipei, Taiwan

[21] Appl. No.: **840,492**

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[51] **Int. Cl.**[4] **G03B 1/00**; G03B 13/02; G03B 17/38

[52] **U.S. Cl.** **354/159**; 354/213; 354/222; 354/266

[58] **Field of Search** 354/159, 222, 212, 213, 354/266; 352/79

[56] **References Cited**

U.S. PATENT DOCUMENTS

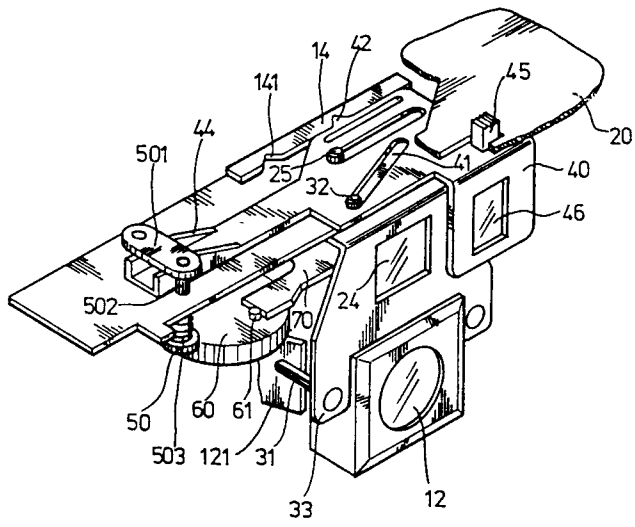
2,233,239	2/1941	Baumgartner	354/159
2,247,104	6/1941	Takacs	354/159
2,295,801	9/1942	Nagel	354/159
2,522,387	9/1950	Linens	354/159
2,621,561	12/1952	Andersson	354/159 X

Primary Examiner—Michael L. Gellner

[57] **ABSTRACT**

A camera having means for regulating the exposure area of a frame of film has one operating member extending to the outside of the camera body and arranged to operate a regulating plate inside the camera body to move said plate between two positions. In a first position, as shown in the drawing, a full frame of film is exposed and a whole picture can be viewed through the viewfinder, and in the second position, the side areas of the viewfinder are shielded by the plate and a pair of opaque movable blades are moved to shield the exposure window from the sides so that only half of the film frame is exposed. At the same time as the regulating plate is moved from the first to the second position, a clutch device for controlling the film advance wheel is actuated, so that the wheel will rotate only one half cycle for each photograph to reduce the length of the wound film to one half of the length that is wound for whole frame photography.

13 Claims, 20 Drawing Figures



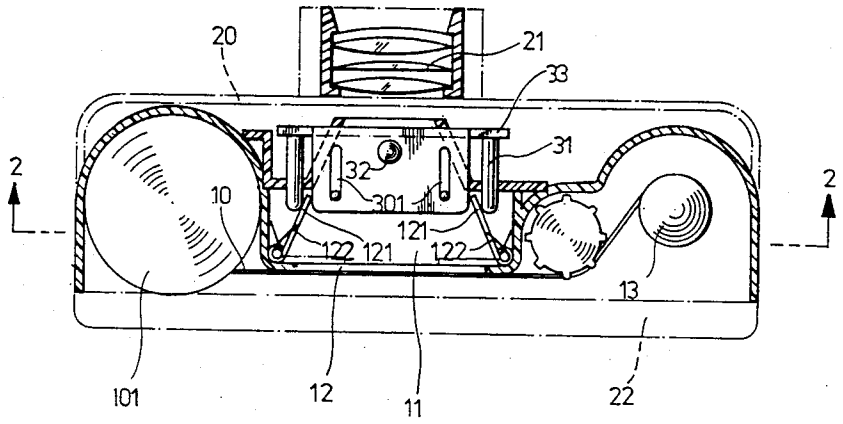

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FIG. 1

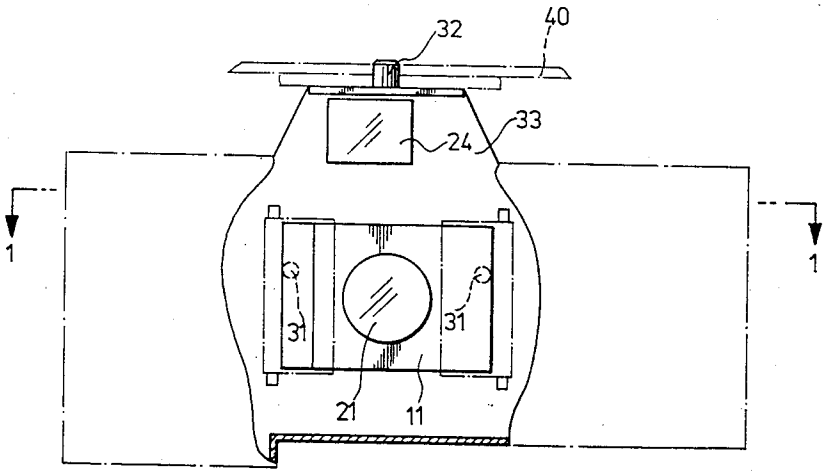

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FIG. 2

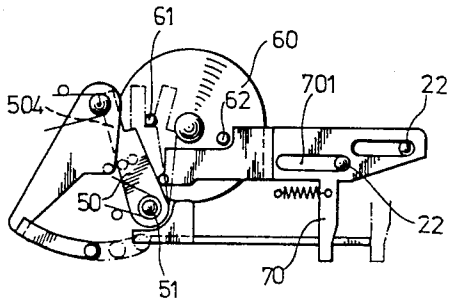


FIG. 5

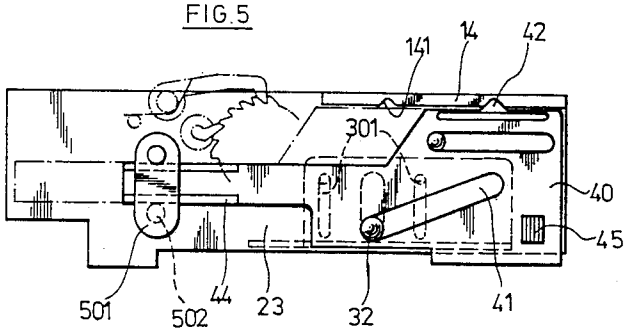


FIG. 4

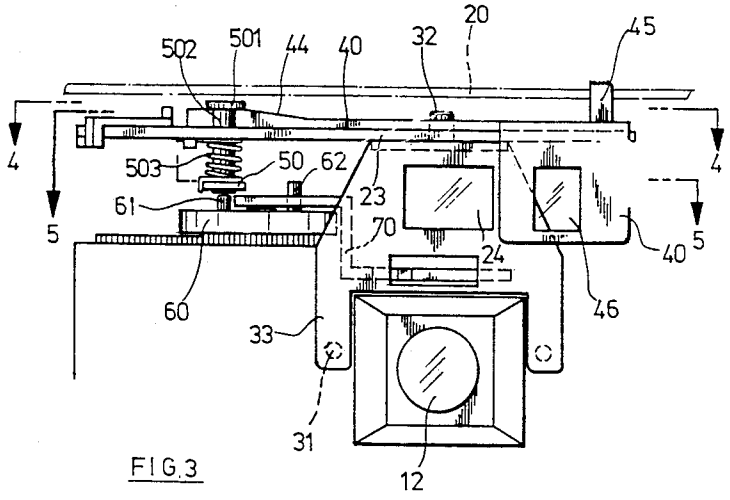


FIG. 3

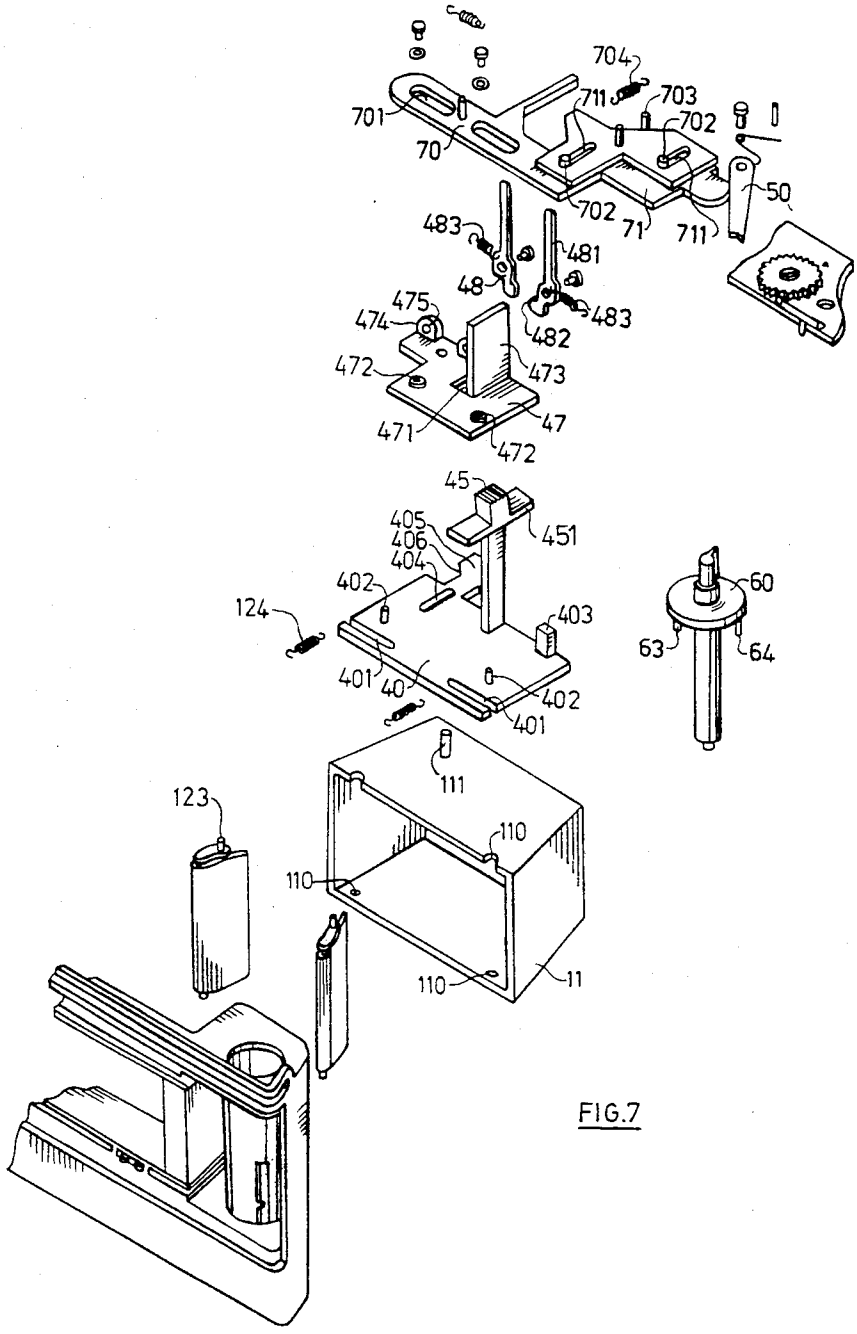

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FIG.7

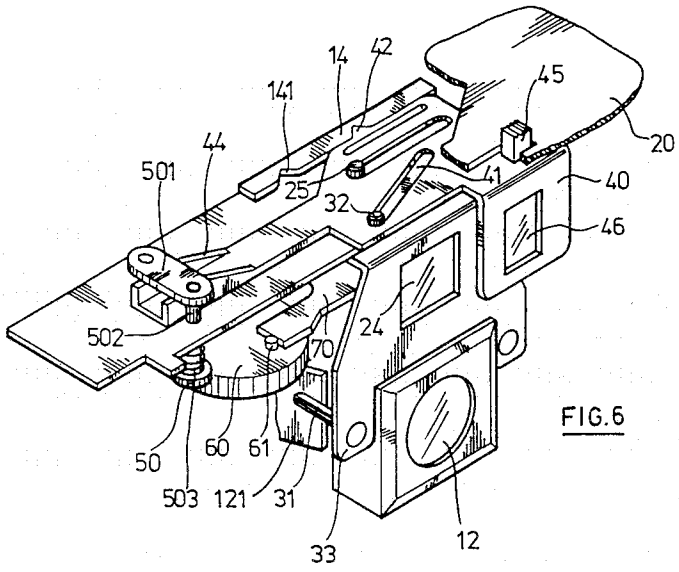


FIG.6

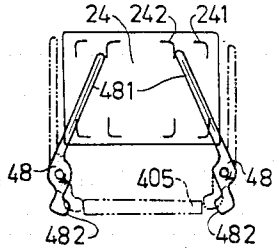


FIG.9

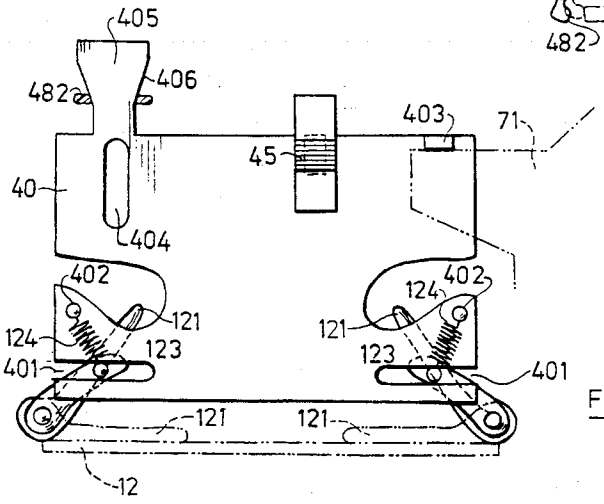


FIG.8

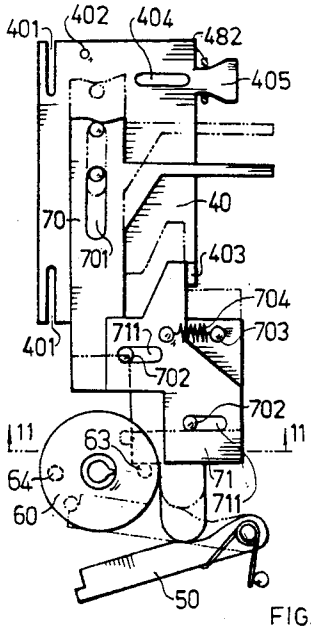


FIG.10

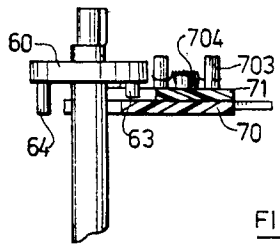


FIG.11

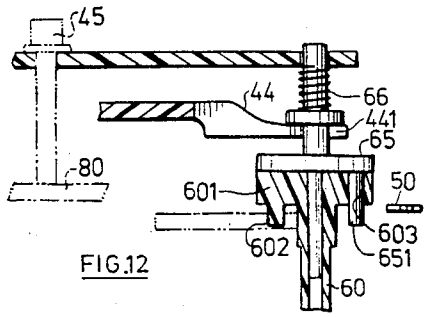


FIG.12

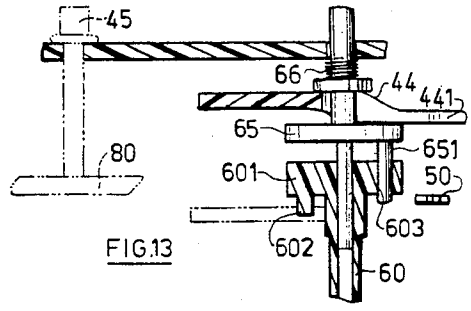


FIG.13

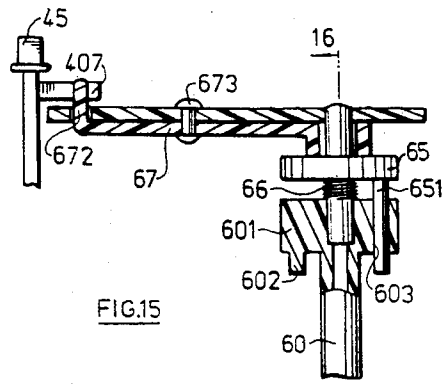


FIG.15

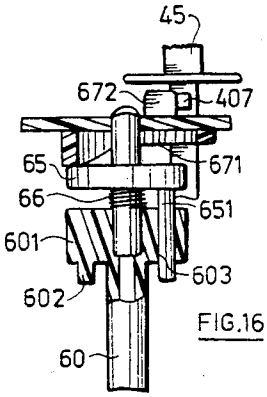


FIG.16

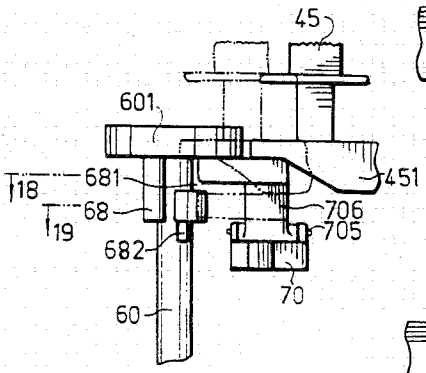


FIG.17

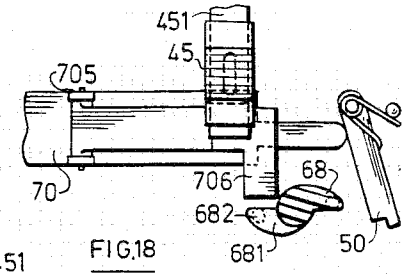


FIG.18

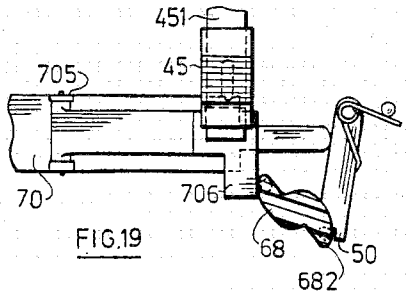


FIG.19

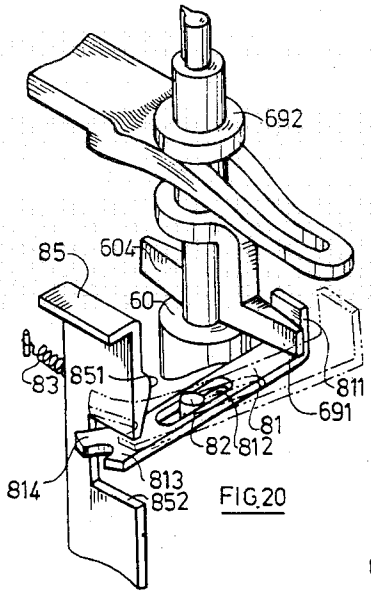


FIG.20

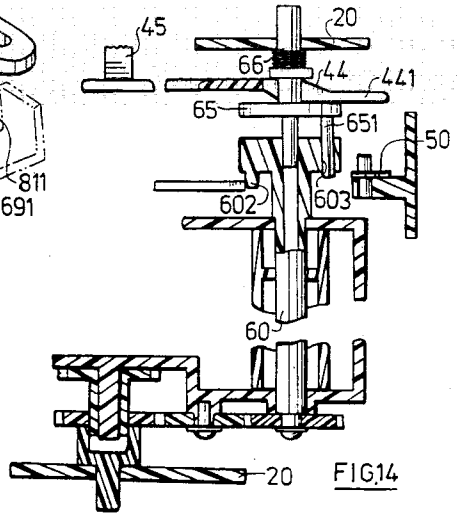


FIG.14

CAMERA MEANS FOR REGULATING THE EXPOSURE AREA OF A FRAME OF FILM

BACKGROUND OF THE INVENTION

Nowadays, cameras can be divided into two types according to how the films are used. One type is called as "whole frame" camera, and the other type as "half frame" camera. If we load a 36 exposure roll of film in a camera and we can only take 36 pictures, it is a "whole frame" camera, but if we load a 36 exposure roll of film and we can take 72 pictures, it is a "half frame" camera. The reason is that when the shutter release button of a whole frame camera is pressed, a whole frame of film will be exposed to light while in a "half frame" camera, only "one half" of a frame will be exposed to light. Therefore a "half frame" camera can take twice as many pictures as a "whole frame" camera. Of course, a "whole frame" camera can take wider and clearer pictures because its exposure area is a "whole frame". However, when an object to be photographed is too small or far away, areas around the frame would be unnecessary so as to waste some of the film. Under this situation, the most ideal and economic way is to take pictures with a "half frame" camera. Moreover, when we are taking pictures, we often find that, when the roll of film is nearly used up, there are still several valuable pictures not yet taken, but there is insufficient film left. Under such situation it would be convenient if we could change a "whole frame" camera to a "half frame" camera in order to take the desired pictures. It has previously been proposed to provide devices for adjusting the exposure area or to adjust photographing but such devices have tended to be complicated and inefficient.

One such device proposed in U.S. Pat. No. 2,247,104 adjusts the exposure area of a film by using a roll and a string to pull a screen to move toward the film horizontally so that the area of exposure can be appropriately shielded. This device is very complicated, cannot ensure the film length which has been wound, and can not be easily operated.

Another device has been proposed in U.S. Pat. No. 2,295,801 which uses a slide to adjust a mask plate to shield the dimensions of the viewfinder and adjust the winding length of the film simultaneously by means of a gear set. Another separate operation makes the opening rotate 90 degrees to change the exposure area.

A further device has been proposed in U.S. Pat. No. 2,522,387, in which the body of the camera can be moved from two end sides toward the centre to change the width of the camera body such that the exposure area and the viewfinder dimensions are adjusted.

All the devices described above possess a complicated structure and cannot be manufactured easily. Therefore, my former U.S. pending patent is identified with Ser. No. 706,291 providing a device which can change dimensions quickly and be operated easily.

BRIEF SUMMARY OF THE INVENTION

The object of the present invention is to provide a two-size camera which utilizes a slide to move one special device to actuate the view shield device to shield portion of view area from two sides of the viewfinder such that the effective view width of the viewfinder is reduced to one half of the original size, to move two opaque blades to shield the sides of the exposure window such that the exposure width is reduced to one half of the original size, and, at the same time, to reduce the film length wound by the film advance wheel to one half of the normal length.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be further described, by way of example, with reference to the drawings, in which:

FIG. **1** is a top sectional view of one example of a camera according to the invention taken along the line **1—1** of FIG. **2** to show the changing device for the exposure window width;

FIG. **2** is a front partial sectional view of the camera shown in FIG. **1** taken along line **2—2** of FIG. **1**;

FIG. **3** is a rear view of the camera shown in FIGS. **1** and **2** to show the position of the regulating plate;

FIG. **4** is a top view taken along the line **4—4** of FIG. **3**;

FIG. **5** is a top view taken along the line **5—5** of FIG. **3** to show the length control of wound film;

FIG. **6** is a perspective view to show the corresponding positions of the main components of this invention;

FIG. **7** is a perspective view of disassembled components of a camera according to a second example of the invention;

FIG. **8** is a top partial view of the second example to illustrate the operating relationship between the regulating plate and the opaque movable blades;

FIG. **9** is a front partial view of the second example to illustrate the view shielding device for shielding the viewfinder;

FIG. **10** is a top partial view of the second example to illustrate the operating relationship between the regulating plate and the film advance wheel;

FIG. **11** is a section taken along the line **11—11** of FIG. **10**;

FIG. **12** is a section of a third example to show how the regulating plate controls the film advance wheel;

FIG. **13** is a front view corresponding to FIG. **12** but showing another operation;

FIG. **14** is a further front sectional view corresponding to FIG. **13** but showing additional components;

FIG. **15** is a front view showing a fourth example illustrating how the regulating plate controls the film advance wheel;

FIG. **16** is a side partial view of FIG. **15**;

FIG. **17** is a side view of a fifth example to show how the regulating plate controls the film advance wheel;

FIG. **18** is a partial view taken along the line **18—18** of FIG. **17**;

FIG. **19** is a partial view taken along the line **19—19** of FIG. **17**; and

FIG. **20** is a perspective view of a sixth example.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to the invention, a camera which can regulate the exposure area of a frame of film comprises a body; a film advance wheel for turning the film take-up spool around and for returning a shutter striking plate to its original position; a regulating plate; a view shield device arranged to be actuated by the regulating plate and movable between a first position in which it is substantially clear of the viewfinder and a second position in which it is effective to shield the viewfinder to reduce the viewing area to approximately half the total width thereof; means for guiding movement of the regulating plate; at least two opaque movable blades arranged to be driven by the regulating plate to shield an

exposure window of the camera from the sides of the window such that the width of the exposure window is reduced to approximately one half of the total width; a clutch device actuable by the regulating plate to control the film advance wheel to rotate through one cycle or one half cycle on each operation of the shutter mechanism of the camera; and an operating member accessible from outside the camera, said operating member being arranged to move the regulating member between two positions: when said regulating member is moved from a first to a second position, the view shield device is moved to the second position, and the opaque movable blades are moved to shield half of the width of the exposure window and also the control means for the film advance wheel is operated so that said wheel can rotate through only one half cycle after each shutter operation such that the length of the film advance is reduced to one half of the normal length advanced; and when said regulating member is moved from the second position back to the first position, the view shield device is moved to the first position, and the opaque movable blades are moved to a position in which they no longer obstruct the exposure window and will move said control means for the film advacnce wheel so that said wheel can rotate through one full cycle after each shutter operation, so that the length of film advanced corresponds to a full frame of the exposure window.

According to one embodiment of the invention, the view shield device comprises a viewfinder eyepiece cover (the width of the view shield device is one half of the width of the viewfinder) movable with the regulating plate to overlap the viewfinder when the said regulating plate is moved to its second position.

In another embodiment of the invention, the view shield device comprises a pair of indicating pointers which are actuable by the regulating plate and can be moved from the sides of the viewfinder to cover the side areas of the viewfinder, when the regulating plate is moved to its second position.

As a further alternative, the view shield device may comprise an indicating device which is actuable by the regulating plate and is pivotally movable to cover the side areas of the viewfinder, when the regulating plate is moved to its second position.

The clutch device may comprise at least one inclined plate which is on the regulating plate and is engageable with means for regulating the elevation of a locating hook, and therefore the film advance wheel may be provided with two projections of different height: the locating hook being effective to block only one of the projections in the first position of the regulating plate to permit one complete revolution of the film advance wheel, or the said locating hook to block both of the projections in the second position of the regulating plate to permit only half a revolution of said film advance wheel.

Alternatively, the clutch device may comprise two overlapping clutch plates mounted on a shutter striking plate and the film advance wheel may be provided with two projections of different height: said clutch plates being movable by the regulating plate to one position so that only one of the projections is blocked by the clutch plates so as to permit one complete revolution of the film advance wheel, and in the other position both of the projections are blocked by the clutch plates so as to permit only half a revolution of the said film advance wheel.

Preferably, the projections on the film advance wheel comprise pins of different height spaced apart by 180 degrees from each other and located at substantially the same radial distance from the axis of the wheel.

According to another embodiment of the invention, the clutch device comprises an auxiliary drive wheel which is engageable with the film advance wheel and which is coaxially arranged with respect thereto, the regulating plate having an inclined face which is engageable with the auxiliary drive wheel to raise or lower said wheel and the auxiliary drive wheel having a projection which in the lower position of said wheel is engageable with blocking means to restrict rotation of the film advance wheel. The projection on the auxiliary drive wheel may comprise an auxiliary drive rod which extends through a bore in the film advance wheel provided with a main drive rod spaced from the auxiliary drive rod by 180 degrees, the rods being located at substantially the same radial distance from the axis of said film advance wheel. Alternatively, the projection on the auxiliary drive wheel may comprise a drive cam.

According to a further embodiment of the invention, the clutch device comprises a cam having two cam lobes mounted on the film advance wheel, one cam lobe being engageable with a projection in both positions of the regulating plate and the other cam lobe being engageable with a projection on only the second position of the regulating plate. The regulating plate may be provided with an inclined face which is engageable with a lever and which is effective, when the regulating lever is moved to its second position, to move said lever into a position in which it is engageable with both of said cam lobes.

According to yet another embodiment of the invention, the clutch device comprises a brake plate engageable with a drive cam mounted on the film advance wheel, one end of said brake plate being engageable by the drive cam and the other end being engageable in an opening in a press plate, the brake plate being movable, in response to movement of the regulating plate, between a first position in which it permits one complete revolution of the film advance wheel for full frame photography and a second position in which it permits only one half revolution of the film advance wheel for half frame photography.

Referring to the drawings, the camera has a chamber for accommodating a film cartridge **101** from which a film **10** can be pulled to pass an exposure window **12** of an exposure chamber **11** and be wound up by a film advance wheel **13**. Between the exposure window **12** and the lens **21** of the camera, there are two opaque pivotally movable blades **121** which are acted upon by respective springs **122** and open toward the lens **21**. The front ends of movable blades **121** are engaged by respective push rods **31** which, when moved towards the back cover **22** of the camera, will push the opaque movable blades **121** to cover the two sides of the exposure window **12** (as indicated by the chain-dotted lines in FIGS. **1** and **2**), so that the exposure width of the frame of the film **10** will become one half of the original exposure width. The push rods **31** are fixed on a plate **33** whose upper end extends perpendicularly to be fixed by a rod **32**. The rod **32** is located in an elongate slot **41** of a regulating plate **40**. This regulating plate **40** can be moved towards the left or the right and its rear edge has a positioning projection **42** engageable with either of two matching notches **141** provided in a positioning plate **14**, whereby the engagement of the projection **42**

in the notches **141** is effective to fix the regulating plate **40** at either of two positions.

As shown in FIGS. **3**, **4** and **6**, an operating member **45** is mounted on the regulating plate **40** and extends to the outside of the camera body **20**, such that the regulating plate **40** can be moved and positioned by the operating member **45** from outside the camera body. A pair of inclined ends **44** at the left side of the regulating plate **40** are mounted under a reciprocating plate **501** to raise or lower said plate **501**. Each end of the reciprocating plate **501** carries a rod **502** which passes through a plate **23** and then is mounted in a coil spring **503** to urge the plate **501** against the plates **44**. A locating hook **50** is mounted at the lower end of one of the rods **502** so that the locating hook **50** can move with the reciprocating plate **501**.

The free end **504** of the locating hook **50** has an opening for blocking a lower positioning pin **61** or an upper positioning pin **62**. These two positioning pins, **61** and **62**, spaced apart by 180 degrees with the same radius, are fixed on a film advance wheel **60** and are able to move a striking plate **70** to a position to get ready for striking. The striking plate **70** has a pair of elongate slots **701** in which respective guide pins **22** are located to make the striking plate **70** move regularly within a certain path.

As shown in FIG. **3**, when the regulating plate **40** is pushed by the operating member **45** to the right side, the whole device is set for whole frame use. The active viewfinder eyepiece cover **46** is moved away from the viewfinder **24** so that the viewfinder **24** can be used for whole frame photography. The inclined ends **44** of the regulating plate **40** push the reciprocating plate **501** to cause the locating hook **50** to rise such that the free end **504** of the locating hook **50** can block the upper positioning pin **62** but cannot block the lower positioning pin **61**, because the lower positioning pin **61** can pass under the locating hook **50**. Furthermore, the elongate slot **41** of the regulating plate **40** does not push the rod **32** at this time, so that the push rods **31**, which are connected to the rod **32** via the plate **33**, will not shut the opaque movable blades **121** so that the exposure window **12** is fully open. While the film advance wheel **60** rotates one cycle on each winging, the striking plate **70** will be pushed to the preparing position for shutter striking. The film advance wheel **60** will rotate one cycle as the shutter is struck once, and the film advance wheel **60** will wind the film to the length required for whole frame photography.

If it is desired to change the camera to perform half frame photography, the operating member **45** is moved to the left side to push the regulating plate **40** along the positioning plate **14** until the positioning projection **42** engages with the left notch **141** of the positioning plate **14**. In this position, the viewfinder eyepiece cover **46** will be located over the viewfinder **24**. Since the width of the viewfinder cover **46** is one half of the width of the viewfinder **24**, an object viewed through the viewfinder **24** is reduced to one half of the whole frame use. The inclined ends **44** will leave from the reciprocating plate **501** so said plate **501** will get down under the weight of itself and the action of the springs **503**, whereby the free end **504** of the locating hook **50** is moved to a position effective to block both the upper positioning pin **62** and the lower positioning pin **61**. At the same time, the elongate slot **41** will push the rod **32** to move the plate **33** towards along the path **301** and a direction which is perpendicular to the pulling direction of the film **10**. The push rods **31** are thus effective to push the associated opaque movable blades **121** to shield the sides of the exposure window **12**, so that the width of the exposure window **12** is reduced to one half of the original width of the whole frame use. Since the locating hook **50** can block both the upper positioning pin **62** and the lower positioning pin **61**, when film advance wheel **60** rotates half a cycle the shutter striking plate **70** will get ready for the shutter strike position but cannot continue winding the film **10**. Therefore, the length of the film **10** to be wound is only half of the length for whole frame use. As described previously, the width of the partly shielded viewfinder **24** is reduced to one half of the width for whole frame use and the same is true for the exposure window **12**. Thus, the camera has become a half frame camera completely and can photograph twice as many pictures as the camera used as a whole frame camera does.

The present invention therefore provides a camera mean which can make a camera be used for whole frame photographing or half frame photographing functions as well. Whenever the half frame camera is desired, use the operating member **45** outside the camera body **20** to push the inside regulating plate **40**, then to make the viewfinder eyepices cover **46** superpose the viewfinder **24**, and also make the opaque movable blades **121** move to cover the sides of the exposure window **12** located between the lens **21** and the film **10** so that the width of the exposure window **12** is reduced to one half of the original width. At the same time, the locating hook **50** is moved down to a position effective to block the upper positioning pin **61** such that the film advance wheel **60** only can wind one half length of the whole frame film as the striking plate **70** gets prepare for shutter striking. Thus, the viewfinder **24**, the exposure window **12**, and the wound film length are reduced to one half of the whole frame camera use at the same time to serve half frame photography.

A second example of a camera means according to this invention is illustrated in FIGS. **7** to **11** of the drawings in which both sides of the upper and lower walls of an exposure chamber **11** has a pair of bores **110** to hold pivot pins for pivotally movable opaque blades **121**. Moreover, the upper wall of the exposure chamber **11** carries a guide pin **111**, a regulating plate **40**, and an operating member **45**, extending to the outside of the camera body. The plate **40** and operating member **45** are formed integrally and the plate **40** is provided at each side with a lateral slot **401** and a rod **402**. Each rod **402** is connected to one end of tension spring **124**, while the other end of spring **124** is connected to eccentric pin **123** of opaque blade **121**. Furthermore, a projection **403** is provided at the far right hand side of the regulating plate **40** and at the left hand side of the plate **40** an elongate slot **404** is provided to receive the guide pin **111** so as to guide the regulating plate **40** in moving back and forth when the latter is mounted on the exposure chamber **11**. A slider **405** is formed at the far left hand side of narrow the regulating plate **40**, and a neck **406** symmetrically formed is to connect said slider **405** and said plate **40**.

A plate **47** is located over the regulating plate **40**, while the centre of the plate **47** having an opening **471** whose side has a support plate **473** to support the slide wall **451** at the lower end of the operating member **45**. The plate **47** further has two raised projections **472** engageable with respective slots **701** of striking plate **70**. Therefore, when the striking plate **70** is mounted on the

plate **47**, it can slide horizontally with respect to the plate **47** within the limits imposed by the engagement of the projections **472** in the slot **701**. The left side of the far end of the plate **47** has a pair of lugs **474**, each lug having a bore **475** for pivotally receiving a corresponding view shielding stick **48**. The lower end **482** of each view shielding stick **48** is pulled by spring **483** towards the other view shielding stick to clasp the neck **406** of the regulating plate **40**. The upper end of each view shielding stick **48** has an indicating pointer **481**, or other appropriate equivalent indicating device, and as shown in FIG. **9**, the pointers are usually located at each sides of the viewfinder **24**. Inside the viewfinder **24**, there are a wider whole frame area boundary line **241** for photograph viewing and a half frame area boundary line **242**, inside the whole frame bounday line, whose width is one half of the whole frame area. If the regulating plate **40** is moved towards the rear of the camera, the lower ends **482** of the view shielding sticks **48** will clasp the wide portion of two sides of the slider **405**, such that the two indicating pointers **481** will be swing pivotally towards each other and enter the position between the half frame boundary line **242** and the whole frame boundary line **241** to let the user understand that the camera is set for half frame photography and that only the view inside the half frame boundary line **242** can be photographed.

The right side of the striking plate **70** has two guide rods **702** and a spring rod **703**, and a clutch plate **71** of two parallel elongate slots **711** is located over the plate **70** with the guide rods **702** extending through the slots **711** in the clutch plate **71**. A spring **704** is mounted on the spring rod **703** and on a similar rod mounted on the clutch plate **71** to urge the clutch plate to the position shown in FIG. 7 of the drawings in which an inclined side edge of the clutch plate **71** is held against the spring rod **703**. The clutch plate **71** is movable on plate **70** by the projection **403** on the regulating plate **40** and the spring **704** on rod **703** will bring clutch plate **71** to its original position. The lower edge of the film advance wheel **60** has a long rod **64** and a short rod **63** spaced apart by 180 degrees at the same radial distance from the axis of the wheel **60**, yet the **63** and **64** rods can be designed as cams or other equivalent components which possess the effective motion with specific cyclic property. When the clutch plate **71**, as shwon in FIGS. **10** and **11**, is pushed to the left by the projection **403** on the regulating plate **40**, its direction towards the position for half frame photography, and the long rod **64** and the short rod **63** of the film advance wheel **60** can push the striking plate **70** to move then the positioning arm **50** moves to the blocking position after the striking plate **70** moves away. After taking a picture, the striking plate **70** comes back to the original position and the positioning arm **50** is therefore pushed away so that the film advance wheel **60** can rotate. Thus, the film advance wheel **60** can only rotate by one half cycle after each photograph. However, if the regulating plate **40** is moved by the operating member **45** back to the original position, only the long rod **64** can push the striking plate **70** to move, therefore, the film advance wheel **60** can rotate by one cycle after each photograph.

According to the above description, as the regulating plate **40** is moved towards the rear of the camera on the axial line parallel to the lens **21**, the pointers **481** of the view shielding sticks **48**, designed for view shielding, can shield the sides of the viewfinder **24** and the opaque movable blades **121** also shield the sides of the exposure window **12** so that the exposure window **12** has only a half width. At the same time, the clutch plate **71** is moved to the position at which the short rod **63** can push, and the positioning arm **50** can swing toward the left to enter the position for blocking the long rod **64** and the short rod **63** only after the striking plate **70** has shifted to the left. Therefore, the film advance wheel **60** can rotate only one half cycle after each photograph so that each film length to be wound is half of the film length to be wound for whole frame photography.

A third example of a camera mean according to the invention is to employ a regulating plate **40** to control the rotating angle of the film advance wheel **60** as shown in FIGS. **12** and **13** of the drawings.

In this example, there is a flange **601** above the film advance wheel **60**, and a main drive rod **602** is installed below the flange **601**. A bore **603** is provided in the flange **601** at the opposite side spaced from the rod **602** by 180 degrees. The upper end of the film advance wheel **60** passes through an elongate slot **441** of the inclined plates **44** on the regulating plate **40**. An auxiliary drive wheel **65** is mounted on the film advance wheel **60** and carries an axuiliary drive rod **651** which engages with the bore **603** of the film advance wheel **60** and extends from the flange **601** by substantially the same length as the main drive rod **602**. The upper portion of the auxiliary drive wheel **65** is always acted on by a coil spring **66**. When the regulating plate **40** is moved to the right as viewed in FIGS. **12** and **13**, the auxiliary drive wheel **65** is raised by the inclined faces of the plates **44** so that only the main drive rod **602** can push the striking plate **70** to move to the left at this moment (there is no clutch plate **71** overlapped on the striking plate **70** in this example); while the positioning arm **50** driven by the striking plate **70** can only block the auxiliary drive rod **651** each time so that the film advance wheel **60** can rotate one cycle for each photograph. However, if the regulating plate **40** is moved to the left, the auxiliary drive rod **651** descends with the auxiliary drive wheel **65** to the position where it can push the striking plate **70**, and because said plate **70** is moved to the left, the positioning arm **50** can block both the main drive rod **62** and the auxiliary drive rod **651**. Therefore, the film advance wheel **60** can only rotate through one half cycle after each photograph. In this case, the regulating plate **40**, similar to that of the first example of this invention, has a elongate slot **41**. When the plate **40** moved horizontally, it can drive the push rods **31** of the first example or the regulating plate **40** of the second example to move back and forth by the aid of the rod **32** to control the opaque movable blade **121** to swing to cover part of the shield exposure window. In this case, the indicating device of the viewfinder **24** can apply either the shiedling method of the first example or the pointer method of the second example.

In the fourth example of a camera mean according to the invention shown in FIGS. **15** and **16**, the regulating plate **40** is similar to that of the second example, the striking plate **70** is the same as the third example, and the film advance wheel **60** and the auxiliary drive wheel **65** are similar to those of the third example, but the spring **66** is installed between the auxiliary drive wheel **65** and film advance wheel **60** and the clutch plate **71** is deleted. The upper portion of the auxiliary drive wheel **65** is disposed with a pivoting lever **67**, and a sloping face **671** is below the right side of the lever **67**. The lever **67** has a bore substantially at its centre to receive of a pivot pin **673** and the other end of the lever **67** has

a rod **672**. A push lever **407** projecting from the regulating plate **40** moves with the regulating plate **40** to the near end to push the rod **672** and to make the lever **67** pivot, so that the sloping face **671** will push down the auxiliary drive wheel **65** as well as the auxiliary drive rod **651**, and also against the action of the spring **66**, the auxiliary drive rod **651** is moved to the position to push the striking plate **70**. The film advance wheel **60** can then only rotate one half cycle for each photograph to achieve the purpose that the film length to be wound is one half of the original length; the working procedure is similar to that in the third example.

A fifth example of a camera mean according to the invention is shown in FIGS. **17** to **19** of the drawings. The regulating plate **40** of this example is similar to that of the second example, but the side below the operating member **45** is connected to a plate **451** which has a sloping face and two different elevated faces. The right side of the striking plate **70** has a pair of lugs **705** which pivotally hold a lever **706** strained upwardly to touch the plate **451**. Above the film advance wheel **60**, a cam **68** is mounted and has two cam lobes and one of them having an opening **681**. The characteristics of the cam **68** are demonstrated clearly in FIGS. **18** and **19**.

When the operating member **45** is moved to the near end, the plate **451** will press the lever **706** down to the position along the line **19—19** of FIG. **17** such that both lobes of the cam **68** can push the lever **706** to make the striking plate **70** move to the left and make the positioning arm **50** enter the blocking position to hold against the rod **682** below the cam **68**. Therefore, the film advance wheel **60** can rotate only one half cycle for each photograph. However, if the operating member **45** is moved to the far end, the lever **706** is moved upwardly due to the spring force to the elevation of the opening **681** in the cam **68**, so that the lever **706** can block only the cam lobe without an opening and the positioning arm **50** can only block one of the rod. Therefore, the film advance wheel **60** rotates one complete cycle for each photograph.

All the examples described above use the film advance wheel **60** to push the striking plate **70** to the preparing position for shutter striking. However, in the sixth example shown in FIG. **20** of the drawings, the drive structure of the film advance wheel **60**, either a rod or a cam, can be revised as pull brake plate **81**. As shown in FIG. **20**, there is a main drive cam **604** on the film advance wheel **60**, whose function is equivalent to that of the main drive rod in the previous example. An auxiliary drive cam **691** is connected with an elevating ring **692**, and can be pushed by the slopping face of the regulating plate **40** to lift or descend freely on the film advance wheel **60** Said cam **691** functions as the auxiliary drive rod in previous example.

A brake plate **81**, having a raised portion **811** at one end, is located within the action radius of the drive cam **604**. An elongate slot **812** is provided at the centre of the brake plate **81** and pivotally holds a pin **82**, so that the brake plate **81** can rotate and swing back or forth within a fixed path. The other end of the brake plate **81** is forked into a blocking foot **813** and a support foot **814** which is always strained by the force of a spring **83** and disposed close to the side of press plate **85** which has an opening **852**. The press plate **85** is so arranged that, when it is pressed, its lower end can push the shutter shield plate to act so that the film is exposed. Also the bulging portion **851** will to push the brake plate **81** to swing and make the raised portion **811** leave away from can **604** or **691**. Then the film advance wheel can rotate counterclockwise due to external force. At this moment, the brake plate **81** is pulled by the spring **83** to draw back and to swing slightly toward the right to let the blocking foot **813** enter the opening **852** of the press plate **85**. The press plate **85** cannot then be pressed further until one of the cams **604** and **691** can touch the raised portion **811** of the brake plate **81** and pull it forward to make the blocking foot **813** move away from the opening **852** of the press plate **85**. Since the cams **604** and **691** are spaced apart from each other by 180 degrees, photographing can work as the film advance wheel is controlled by the regulating plate **40** to rotate one complete cycle or one half cycle.

In all the examples described above, when the striking plate **70** is pushed each time to the preparing position for shutter striking and the film advance wheel **60** rotates through a full cycle or a half cycle, the clutch devices for the interaction between the striking plate **70** and the film advance wheel **60**, formed as rod, cam, or other equivalent devices, all possess the same function motion with a specific cyclic property; they are regarded to be the characteristics of this invention.

Based on all the examples, it can be understood that the regulating plate **40** of this invention actuates the view shield device to shield the portion of the view area from the sides of the viewfinder, drive the opaque movable blades to swing to shield the exposure window from the sides, and actuate a clutch device to control the rotation range of the film advance wheel such that those devices of this invention enable a camera to be shifted quickly for whole frame or half frame photographing.

I claim:

1. A camera which can regulate the exposure area of a frame of film comprising:

(a) a body;

(b) a film advance wheel for turning the film take-up spool around and for returning a shutter striking plate to its original position;

(c) a regulating plate;

(d) a view shield device arranged to be actuated by the regulating plate and movable between a first position in which it is substantially clear of the viewfinder and a second position in which it is effective to shield the viewfinder to reduce the viewing area to approximately half the total width thereof;

(e) means for guiding movement of the regulating plate;

(f) at least two opaque movable blades arranged to be driven by the regulating plate to shield an exposure window of the camera from the sides of the window such that the width of the exposure window is reduced to approximately one half of the total width;

(g) a clutch device actuable by the regulating plate to control the film advance wheel to rotate through one cycle or one half on each operation of the shutter mechanism of the camera;

(h) an operating member accessible from outside the camera, said operating member being arranged to move the regulating member between two positions and the regulating member being arranged, when being moved from a first to a second position, to move the view shield device to the second position, to move the opaque movable blades to shield half of the width of the exposure window

and to move control means for the film advance wheel so that said wheel can rotate through only one half cycle after each shutter operation such that the length of the film advanced is reduced to one half of the normal length advanced; when being moved from the second position back to the first position, to move the view shield device to the first position, to move the opaque movable blades to a position in which they no longer obstruct the exposure window and to move said control means for the film advance wheel so that said wheel can rotate through one full cycle after each shutter operation so that the length of film advanced corresponds to a full frame of the exposure window.

2. A camera according to claim 1, wherein said view shield device comprises a viewfinder eyepiece cover whose width is one half of the width of the viewfinder and which is movable with the regulating plate to overlap the viewfinder when the said regulating plate is moved to its second position.

3. A camera according to claim 1, wherein said view shield device comprises a pair of indicating pointers which are actuable by the regulating plate and can be moved from the sides of the viewfinder to cover the side areas of the viewfinder when the regulating plate is moved to its second position.

4. A camera according to claim 1, wherein said view shield device comprises an indicating device which is actuable by the regulating plate and is pivotally movable to cover the side areas of the viewfinder when the regulating plate is moved to its second position.

5. A camera according to claim 1, wherein said clutch device comprising at least one inclined plate on the regulating plate and said inclined plate is engageable with means for regulating the elevation of a locating hook and wherein the film advance wheel is provided with two projections of different height, the locating hook being effective to block either only one of the projections in the first position of the regulating plate to permit one complete revolution of the film advance wheel, or to block both of the projections in the second position of the regulating plate to permit only half a revolution of said film advance wheel.

6. A camera according to any one of claims 1 to 4, wherein said clutch device comprises two overlapping clutch plates mounted on a shutter striking plate and wherein the film advance wheel is provided with two projections of different height, said clutch plates being movable by the regulating plate so that in one position only one of the projections is blocked by the clutch plates so as to permit one complete revolution of the film advance wheel and in the other position both of the projections are blocked by the clutch plates so as to permit only half a revolution of the said film advance wheel.

7. A camera according to claim 6, wherein the projections on the film advance wheel comprise pins of different height spaced apart by 180 degrees from each other and located at substantially the same radical distance from the axis of the wheel.

8. A camera according to any one of claims 1 to 4, wherein said clutch device comprises an auxiliary drive wheel which is engageable with the film advance wheel and which is coaxially arranged with respect thereto, the regulating plate having an inclined face which is engageable with the auxiliary drive wheel to raise or lower said wheel and the auxiliary drive wheel having a projection which in the lower position of said wheel is engageable with blocking means to restrict rotation of the film advance wheel.

9. A camera according to claim 8, wherein the projection on the auxiliary drive wheel comprises an auxiliary drive rod which extends through a bore in the film advance wheel and wherein the film advance wheel is provided with a main drive rod spaced from the auxiliary drive rod by 180°, the rods being located at substantially the same radial distance from the axis of said film advance wheel.

10. A camera according to claim 8, wherein the projection on the auxiliary drive wheel comprises a drive cam.

11. A camera according to any one of claims 1 to 4, wherein said clutch device comprises a cam having two cam lobes mounted on the film advance wheel, one cam lobe being engageable with a projection in both positions of the regulating plate and the other cam lobe being engageable with a projection in only the second position of the regulating plate.

12. A camera according to claim 11, wherein the regulating plate is provided with an inclined face which is engageable with a lever and which is effective, when the regulating plate is moved to its second position, to move said lever into a position in which it is engageable with both of said cam lobes.

13. A camera according to any one of claims 1 to 4, wherein said clutch device comprises a brake plate engageable by a drive cam mounted on the film advance wheel, one end of the brake plate being engageable by the drive cam and the other end being engageable in an opening in a press plate, the brake plate being movable, in response to movement of the regulating plate, between a frist position in which it permits one complete revolution of the film advance wheel for full frame photography and a second position in which it permits only one half revolution of the film advance wheel for half frame photography.

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